DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFMC)
HILL AIR FORCE BASE, UTAH

5 September 2003

FROM: OO-ALC/LCKA
6038 Aspen Ave, Bldg. 1289U
Hill AFB, UT 84056-5806

SUBJECT: A-10 Replacement for the Color Airborne Video Tape Recorder RFI Number F42620-03-R-AAAK

1. On 17 June 2003 OO-ALC/LCAP held an industry day to obtain and provide information to industry on the possible replacement for the A-10 Color Airborne Video Tape Recorder (CAVTR). In response to the feedback from that industry day, a draft Statement of Work (SOW) is attached. OO-ALC/LCKA and OO-ALC/LCAP request all potential offerors review the attached SOW and provide feedback and comments to the undersigned. Please provide all comments via email or fax to the undersigned at james.durrant@hill.af.mil or fax to 801-775-5339 by close of business 15 September 2003.

2. At this time, OO-ALC/LCKA also requests potential offerors to review and provide comments, concerns, ideas back regarding the potential contract structure. The following summarizes the potential contract structure and CLINS:

    a. Contract Type: Indefinite Delivery, Indefinite Quantity
    b. Period of Performance: 5 Years
    c. Contract Line Item Numbers (CLINs) and pricing arrangement:
        i. CLIN 0001, Initial Test Unit, Firm Fixed Price
        ii. CLIN 0002, Production Units, Firm Fixed Price per Unit broken into quantity bands of fifteen units. For example:
            0 to 15 Units
            16 to 30 Units
            31 to 45 Units
            46 to 60 Units
        iii. CLIN 0003, Additional Mass Media Storage Devices, Firm Fixed Price per Unit broken into quantity bands of fifteen units (See CLIN 0002 for example of quantity bands).
        iv. CLIN 0004, PC and Hardware Interface, Firm Fixed Price per Unit broken into quantity bands of fifteen units (See CLIN 0002 for example of quantity bands)
        v. CLIN 0005, Warranty, in accordance with the attached SOW, Firm Fixed Price per unit.
        vi. CLIN 0006, Teardown and Evaluation, for non-warranty repairs, Firm Fixed Price per unit.

vii. CLIN 0007, Minor Repair, for non-warranty repairs, Firm Fixed Price per unit.
viii. CLIN 0008, Major Repair, for non-warranty repairs, Firm Fixed Price per unit.
ix. CLIN 0009, Flight Test Support, for initial flight test and field support, Firm Fixed Price.
x. CLIN 0010, Contract Data Line Item Requirements, in accordance with the attached SOW, Not Separately Priced.

3. Questions regarding the CAVTR Acquisition should be directed to the undersigned at 801-777-2867 or via email to james.durrant@hill.af.mil.

JAMES L. DURRANT
Contracting Officer

Attachments:
Draft Statement of Work, dated 9/4/2003

Statement of Work (SOW)

For the

Digital Video Recorder (DVR)

On

A/OA-10 Aircraft

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1. **SECTION I – SCOPE:** The purpose of this Statement of Work (SOW) is to define the requirements for a replacement and repair of the Digital Video Recorder (DVR) for the existing A-10 Color Airborne Video Tape Recorder (CAVTR). Lockheed Martin System Integration (LMSI) will integrate the new DVR into the A-10 Weapon System (WS). LMSI will provide maintenance support to fully integrate the DVR's new capabilities into the aircraft.

1.1. **Background.** The color airborne video tape recorder (CAVTR) currently in use on the A-10 aircraft is comprised of components from a COTS Sony 8mm HandyCam and other components manufactured by DRS/Precision Echo. This device suffers from a low MTBF and faces parts obsolescence problems, presenting a non-mission capable (NMC) situation.

The current CAVTR consists of a color video tape reorder, remote control panel (RCP), and color cockpit television video sensor (CCTVS) camera. The CAVTR is installed in the right console in the cockpit where the pilot can easily change the cassette if need be. The remote control unit consists of two toggle switches in a small housing, mounted on the lower left canopy bow within easy reach of the pilot. The CAVTR records up to two hours on a single Hi-88 mm cassette. The color video camera mounts in the gun camera position and is aimed such that it sees what the pilot sees through the HUD.

The CAVTR records video information from the HUD CCTVS and the cockpit television monitor (TVM). The signal delivered to the CAVTR can be selected manually or automatically. Manual selection is done is done by way if a toggle switch mounted on the lower left canopy bow of the aircraft. By way of the same switch, automatic selection can be enabled. When set to automatic mode, the signal recorded recorded by the CAVTR is HUD symbology from the CCTVS. When TVM video is active and the pilot selects the track command or enables the slew command (right throttle grip), the CAVTR switches from HUD video to TVM video. The CAVTR switches back to the HUD video signal when one of the following conditions occurs:

- Weapons release
- Trigger to 1st detent
- Loss if TVM video

Additionally, the CAVTR records a voice track from the pilot's intercommunications system (ICS). The CAVTR records visual witness-event markers each time the pilot presses the pickle button.

2. SECTION II - APPLICABLE DOCUMENTS
The following documents shall be used for reference.

2.1. Department of Defense Specifications

MIL-STD-961 1 Aug 03	Department of Defense Standard Practice for Defense Specifications
Department of Defense Regulation DODR) 5000.2-R 5 Apr 02	Mandatory Procedures for Major defense Acquisition Programs (MDAPs) and Major Automated Information System (MAISA) Acquisition Programs

2.3 Department of Defense Standards

MIL-STD-499B	Engineering Management
MIL-STD-881A	Work Break Down Structures for Defense Material Development
MIL-STD-961D	Defense Specifications
MIL-HDBK-217	Reliability Prediction of Electronic Equipment
MIL-STD-461 11 Jan 93	Electromagnetic Emissions and Susceptibility Requirements for the Control of Electromagnetic Interference
MIL-STD-882C, with Change Notice 1 19 Jan 93 through 19 Jan 96	System Safety Program Requirements
MIL-HNDBK-214	Reliability Prediction

2.4 Other Government Documents

2.4.1 USAF Technical Orders

1A-10A-2-1-1 Basic 10 Apr 82 Chg 34 1 Sep 01	Organizational Maintenance, General Equipment
T.O. 00-5-1	Air Force Technical Order System
T O. 00-5-3	Air Force Technical Manual Acquisition Procedures
T.O. 00-5-15	Air Force Time Compliance Technical Order System
1A-10A-2-110-1-1, Basic 30 Aug 88, Chg. 13 1 Apr 03	Organizational Maintenance, Supplemental Manual, Wiring Diagrams
1A-10A-4-94-1, Basic 15 Nov 02, Chg. 1 15 May 03	Organizational Maintenance, IPB
1A-10A-2-110-1, Basic 30 Aug 88, Chg. 14 1 Apr 03	Organizational Maintenance, Wiring Diagrams
TM-86-01 F	Air Force Technical Manual Contract Requirements

2.4.2 Forms

DD250	Material Inspection and Receiving Report
DD1149	Requisition and Invoice / Shipping Document
DD 1574	Serviceable Tags – Material
SF 364	Report of Discrepancy

3 SECTION III - REQUIREMENTS

3.1 Management Plan. The A-10 digital video recorder (DVR) shall consist of a solid-state digital recorder a mass memory device, and a playback interface. The contractor shall establish a management system and develop, maintain, and deliver a management plan [Contract Data Requirements List (CDRL A001)]. Management plan is to be evaluated one time only and be part of proposal requirements instead of reporting requirements after award. The contractor shall establish and maintain a risk management program for the purpose of early identification of program risk and mitigation of risk such that minimal acceptable contract performance. Risk management plan should be part of proposal requirements with updates required by CDRL

3.2 Performance. Contractor shall provide a DVR that meets or exceeds the requirements of the A-10 aircraft. The DVR must not degrade current aircraft performance or operational capabilities. The DVR shall be 5.88 inches wide x 6.39 inches deep x 4.75 inches tall, exclusive of connectors, control knobs, eject mechanism, and memory access door (see Appendix B)

3.3 Specifications. Contractor shall provide a digital video recorder with four (4) video inputs (separate channels for HUD, Maverick, targeting pod, MFD) and four (4) audio inputs (separate channels for UHF, VHF-AM, VHF-FM, intercom). The DVR shall be capable of simultaneously recording four (4) channels of video and four (4) channels of audio. The format of the recorded video and audio must conform to generally accepted commercial standards so that it can be replayed using commercially available software.

3.3.1 Size. The DVR shall be the same form and fit as the CAVTR. The airborne recorder shall be 5.88 inches wide x 6.39 inches deep x 4.75 inches tall, exclusive of connectors, control knobs, eject mechanism, and memory access door.

3.3.2 Weight. The airborne recorder shall weigh less than or equal to 27 pounds.

3.4 Recording Formats. Contractor shall provide a digital video recorder capable of recording both monochrome (RS-170) and color (NTSC, S-video, etc.) formats. The contractor may describe other line rate video formats possible for potential future growth.

3.5 Potential Growth. Contractor shall provide a digital video recorder with a growth provision for an additional high-speed interface (i.e. 1553) for potential future growth.

3.6 Memory storage. Contractor shall provide a digital video recorder with a removable mass memory device that is accessible within the constraints of the current videotape cassettes

3.6.1 Contractor shall provide a removable, solid-state, mass memory device sufficient to support continuous audio/video/data recording for two (2) hours minimum. The minimum playback quality of the recorded video/audio shall be equivalent to or better than the video/audio recorded on the 8mm videotape.

3.6.2 Contractor shall provide a removable mass memory device that must interface directly with a Windows-based PC using commercial standard PC interfaces and commercially available interface software.

3.6.3 Contractor shall provide the capability to zeroize mass memory via the DVR in the aircraft and via the PC interface.

3.6.4 Contractor shall provide a DVR with a minimum 50% reserve of both CPU throughput and processor memory. Similar reserve capacity shall be available in the interface between the DVR and the mass memory device.

3.6.5 Contractor shall design the DVR with the capability in the mass memory device to allow the PC interface to read and write data files to and from the mass memory device.

3.7 Reliability. Contractor shall design the DVR with the intent of limiting maintenance actions. Contractor shall provide a DVR that meets or exceeds a calculated Mean Time Between Failures (MTBF) of 4000 hours as described by MIL-HDBK-217

3.8 Design and Construction. The contractor shall use design and construction methods to produce a highly reliable and maintainable adapted or designed DVR.

3.8.1 Contractor shall provide a digital video recorder that shall fit within the available space, weight, and power constraints, and interface used by the existing CAVTR hardware (see Appendix B).

3.8.2 Contractor shall design the DVR to be controlled locally. The local control of the recorder will be disabled whenever the remote control panel is active (not in the power-off mode).

3.8.3 Contractor shall design the DVR such that power, record mode, standby, and playback of selected video/audio may be selected via local control.

3.8.4 Contractor shall provide Light-emitting Diode (LED) indicators (active under both remote panel and local control), meeting MIL-STD-3009 requirements for night vision compatible lighting. The power-on indicator shall illuminate when power is applied to the recorder.

3.8.5 Contractor shall provide an integrated synchronized playback capability.

3.8.6 Contractor shall consider ease/cost of maintenance in DVR solution. Contractor shall design the DVR system to have minimal components. Contractor shall minimize aspects (i.e. batteries), which could complicate operator use and long-term maintenance costs. Contractor shall minimize the number and complexity of software interface drivers used in DVR system

3.9 Power interruptions. The contractor shall design the DVR so that power interruptions or dropouts of any duration shall not cause memory or recorder damage. Upon re-application

of power, the recorder shall resume operation in accordance with the existing control switch.

3.10 Maintenance. Contractor shall design the DVR to support system diagnostics for maintenance

3.10.1 Maintenance Levels. The maintenance shall be two-level, organizational and depot. The contractor shall not develop or require any additional organizational level test equipment for adapted or newly designed DVRs.

3.11 Proprietary hardware, software, firmware. There shall be no proprietary hardware, software, or firmware. Any development tools utilized for this project (hardware, software, or firmware) shall be identified and the government shall be allowed to obtain licenses to such property. Source code and documentation shall be delivered in a Windows editable softcopy.

3.12 Technical Manuals. The contractor shall develop and deliver source data indicating the new organizational requirements. (CDRL L001)

3.13 Safety. The contractor shall develop and deliver a Failure Mode Effects and Criticality Analysis (FMECA) IAW (CDRL L011)on the adapted or designed DVR. If a FMECA was accomplished then the contractor shall deliver the data, along with a change analysis for the adaptation, to OO-ALC for consideration. The contractor shall provide a list to OO-ALC of required critical flight safety tests, such as EMC, EMI, shock and vibration, which shall be performed prior to any flight worthiness testing. Due to the possibility of concurrent qualification, SIL, and flight-testing, and to preclude any safety of flight issues, the Government will ensure that all of these tests are successfully completed before the commencement of flight-testing. The contractor shall propose flight test support.

3.14 JEDMICS. The government will release to the contractor drawing numbers for application lists and parts lists that are available through JEDMICS. Additional information will be provided upon request via OO-ALC/LCEB.

3.15 Delivery Requirements. The contractor shall ensure that the units are packaged and delivered IAW the contract schedule, unless otherwise directed by the PCO. The contractor shall deliver the qualified and approved DVR specification concurrent with unit delivery (CDRL N008).

4 Testing

4.1 Contractor shall provide support at the contractor's facility and on-site when requested to assist in such activities as avionics integration, support data analysis, technical coordination, and to analyze potential development and test problems during production. For on-site support, the contractor should plan to support hardware integration testing at OO-ALC, the Design, Test, and Evaluation (DT&E) site at Eglin AFB FL, and the Operational Test and Evaluation (OT&E) site at Nellis AFB NV as directed. The government DVR program manager will define the duration, type of support, and number of persons required. The government estimates no more then four trips of one-week duration (two to OO-ALC, one to DT&E, and one to OT&E).

4.2 Master Test Plan. Contractor shall perform tests on the DVR per the Master Test Plan (MTP). (CDRL N008, N00A, N00E)

4.3 Environmental test. Contractor shall provide results of environmental testing outlined in Appendix A, to include EMI, EMC. (CDRL A007)

4.4 Qualification Testing. The contractor shall qualify the four adapted or designed and built DVRs. The contractor shall notify OO-ALC ten working days prior to all qualification testing. The contractor shall request, in writing, final DVR qualification approval to OO-ALC. The contractor shall prepare and submit an Acceptance Test Plan (ATP) (CDRL N007).

4.5 Ground Test Support. The contractor shall support functional, integration, EMC/EMI and SIL testing being performed by LMSI. Ground test support will include SIL at the Lockheed facility for an estimated maximum of 90 days.

4.6 Flight Test Support. The contractor shall support flight-testing. Flight-testing is the responsibility of the A-10 System Program Office (SPO). Upon successful flight test, the government will certify the DVR.

4.7 Data. The selected contractor chosen for test will provide all data, necessary to conduct a thorough evaluation, to include system architecture, drawings, and documentation for the DVR and mass memory device at no additional cost to the government. (CDRL N007)

5 Warranty

5.1 Warranty Program. The contractor shall implement and manage procedures required to initiate and operate the DVR Warranty Program. The DVR Warranty Program shall include features of warranty, identification of responsible participants, Government and contractor responsibilities, procedures, and interfaces required for successful warranty implementation and A-10 WS sustainment. The contractor shall implement a warranty program with delivery and installation of the first production.

5.2 10-Year Warranty. Contractor shall provide a minimum10-year warranty for the DVR and the mass memory device, production hardware.

5.3 Rest Oks (RTOKs). The contract shall implement processes and procedures to investigate and resolve RTOKs. The contractor shall report in writing the following information of each RTOK: the returning activity base name or Supply Record Account Number (SRAN) and DVR serial number.

5.4 Engineering Change Proposals (ECPs). The contractor shall develop and deliver all ECPs to OO-ALC/LCEB. The Government will expedite processing of no-cost ECPs. The contractor shall submit all minor changes to OO-ALC for verification and proper classification. The government shall consider all minor changes (CDRL N00L).

5.5 Identification Labels and Warranty Seals. The contractor shall place an identification label on the DVR containing information that the DVR is under warranty, the warranty expiration date, and shipping instructions. The contractor shall install warranty seals on all DVRs. The contractor shall mark the shipping container(s) used for transport of warranted DVRs with an external citation of "Failure Free Warranty."

5.6 Receipt and Inspection. The contractor shall inspect reparable shipping containers and DVRs within one working day of receipt. The contractor shall submit a Report of Discrepancy (ROD), SF 364 to OO-ALC upon receipt of damaged reparable shipping containers and DVRs. (CDRL L011).

5.7 Repair Turn-Around-Time. The contractor shall achieve an average turn around time not to exceed 22 calendar days for all warranty repairs measured over each six-month measurement period. In the case of a Mission Capable (MICAP) or Joint Chief of Staff (JCS) project coded requisition; the contractor shall ship a DVR within 24 hours of notification.

Note: The 22 calendar day period starts when a DVR arrives for repair at the contractor's loading dock and ends when a serviceable DVR is accepted by the Government representative and placed in the contractor's secured storage area

5.8 Storage Area and Disposition Instructions. The contractor shall place the DVR in a government bonded storage area when repair action is completed. The contractor shall notify the Production Management Specialist (PMS) for disposition instructions via facsimile, E-mail, or telephone (information in model contract/solicitation) when repaired DVRs are ready for shipment. Disposition Instructions or Ship To and Mark For information will be provided by the OO-ALC PMS via facsimile, E-mail, or telephone prior to any shipments of serviceable assets. The contractor shall ship a DVR within five working days (only Saturdays, Sundays, and statutory holidays shall be considered non-working days) upon receipt of disposition instructions by fastest traceable deliveries. The five-day period shall begin at the start of the contractor's normal workday following notification. The contractor shall provide the PMS with proof of shipment, DD Form 250, Material Inspection and Receiving Report or DD Form 1149, Requisition and Invoice/Shipping Document within two working days of shipment

5.9 Exclusions. The OO-ALC will determine whether or not a returned DVR qualifies as warranty exclusion. The contractor shall present clear and convincing evidence that the damage occurred because of one or more of the reasons listed below. The PCO will not recognize damage occurring on the contractor's premises as exclusion. The contractor shall recognize the following are the sole exceptions to failure free warranty coverage:

a. Non-DVR induced fire,
b. Non-DVR induced explosion,
c. Non-DVR aircraft crash,
d. Submersion,
e. Acts of God such as flood, hurricane, tornado, and earthquake,
f. Results of combat action,
g. Damage caused by unauthorized maintenance by Government personnel

.

5.10 Asset Posture Reporting. The contractor shall keep the government informed of basic asset status to include National Stock Number (NSN), condemnations, reparables on-hand, serviceables on-hand and shop flow days through the Production and Warranty phase as required. (CDRL L006)

5.11 Contractor Repair Records. The contractor shall maintain repair records by serial number for each DVR under warranty. A copy of records shall be made available to OO-ALC, upon request. (CDRL L016).

5.12 Teardown Deficiency Report. The contractor shall provide teardown and analysis of failed or mishap-related units as directed by OO-ALC. The contractor shall complete and forward a Teardown Deficiency Report (TDR) on identified units within 5 working days after receipt of exhibit. (CDRL L011). The contractor shall request additional time and provide rationale if TDR cannot be delivered within time frame above. Request for extension shall include a preliminary assessment of exhibit condition. The government; when feasible will provide notice to contractor when exhibits requiring a TDR are to be shipped.

Appendix-A: DVR Environmental Requirements. These are derived from the Northrop Grumman A-10A Shock, Vibration and Acoustics Qualification Procedures for Aircraft Equipment Final Report dated 30 April 1996.

Figure 1. Vibration Envelope for Random Vibration Test

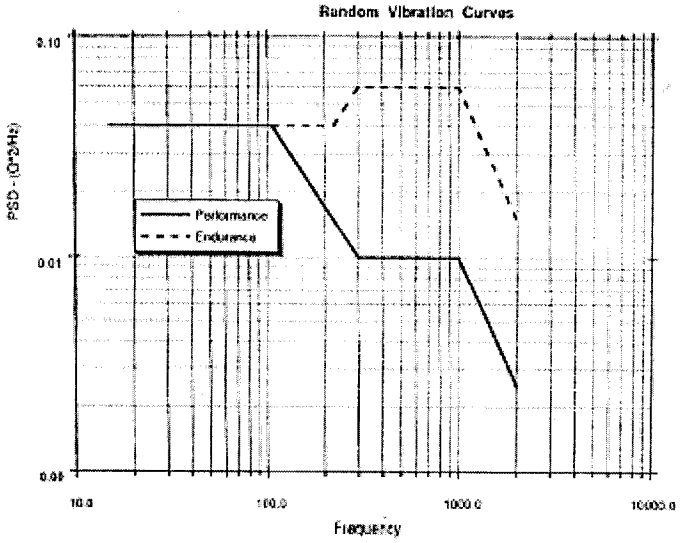


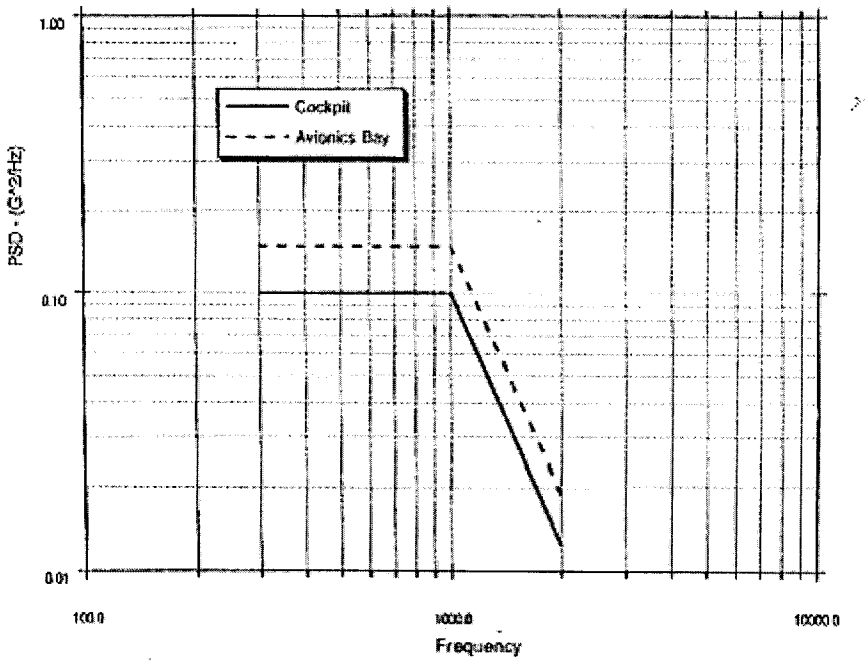
Table 1. Gunfire Vibration Sine Sweeps* (Maximum Acceleration – G's)

Frequency (Hz)	Zones									
	1A	1	2 Cockpit**	2 Avionics**	3	4	5	6	7	8
66	15	3	5	5	5	None	None	None	None	5
132	15	10	5	5	5	"	"	"	"	5
198	15	10	5	5	5	"	"	"	"	5
263	25	15	5	5	5	"	"	"	"	5
329	25	15	5	10	None	"	"	"	"	None
395	25	15	5	10	"	"	"	"	"	"
461	20	15	5	10	"	"	"	"	"	"
527	20	15	5	10	"	"	"	"	"	"
593	20	15	5	10	"	"	"	"	"	"
658	15	15	5	10	"	"	"	"	"	"
724	15	15	5	10	"	"	"	"	"	"
790	15	15	5	10	"	"	"	"	"	"
856	15	15	5	10	"	"	"	"	"	"

* 7.5 Minute Sweep/Frequency/Axis (Sweep from 0.95 to 1.05 of Center Frequency @ 0.5 Octave/Minute)

** For the Alternate Composite (Sine/Random) Gunfire Tests for Zone 2, use the first four harmonics only (5G @ 66,132,198 and 263 Hz) in conjunction with the Alternate Gunfire Random Spectrum (Figure 3-11)

Figure 2. Alternate Gunfire Random Vibration Curves



MATERIAL/FINISH: ❸ ❹

A. Housing, Front Panel, Rear Panel. The material shall be aluminum alloy per a 5052 (JIS) or equivalent: external finish, flat black conductive corrosion resistant coating.

ENVIRONMENTAL REQUIREMENTS: ❶ ❷

A. Storage Temperature	-40°C to +60°C (-°F to °F) MIL-STD-810.501.1 (I) and 502.1 (I)
B. Operating Temperature	-15°C to + 55°C (+5°F to 130°F)
C. Storage Humidity	85% (30°C) to 95% (65°), MIL-STD-810 507.1 (I) at 2 cycles per min.
D. Operation Humidity	Zero to 98% relative humidity at 100° F
E. Atmospheric Pressure	Sea level to 15,000 meters (50,000FT) Or more in un-pressurized, unsealed case, MIL-STD-810 504.1
F. Shock	15 g's in any axis, MIL-STD-810 516.2(I) 30 g's crash safety, MIL-STD-810 516.2(III)
G. Acceleration (Operating)	10 g's MIL-STD-810 513.2(II)
H. Explosive Atmosphere	Sea level to 15,000 meters at +55°C, MIL-STD-810 511.1 (I)
I. EMI/RFI	MIL-STD-461,

ENVIRONMENTAL REQUIREMENTS: (MODIFCATIONS AND ADDITIONS)

A. Vibration Test Requirements:

This section establishes the laboratory vibration qualification test procedures IAW the "A-10A Shock, Vibration and Acoustics Qualification Procedures for Aircraft Equipment" (April 30, 1996). Vibration tests are required to demonstrate compatibility between airplane environment and the equipment. Unless otherwise specified the vibration test shall consist of (1) performance testing which demonstrates specified functioning for normal flight or ground operation and (2) endurance testing to prove the equipment shall operate for the life of the airplane.

Tolerances shall be in accordance with MIL-STD-810. Method 514.2 unless modified herein.

1. Random Vibration Endurance Test: This random vibration test is conducted over the frequency range of 15 to 2000Hz for one hour per axis. During the Endurance vibration qualification testing, the test article shall be operating but does not have to meet the specified performance requirements. At the conclusion of the Endurance testing in each axis, the test article shall perform to the specified requirements and be closely inspected for any failures. The applicable Endurance random vibration spectra is depicted in Figure 1.

2. Random Vibration Performance Tests: This random vibration test is conducted over the frequency range of 15 to 2000Hz. The applicable Performance random vibration spectra is depicted in Figure 1. Prior to random vibration testing in each of the three orthogonal axes, a sine vibration sweep (Input? </= 2G) shall be conducted for a resonance survey. The frequency sweep shall be conducted at approximately one octave per minute from 5 to 2000Hz at 0.24 inch double amplitude or +/- 2G, whichever is less. In the same axis the first half of the Performance random vibration test will be conducted for one-half hour and the equipment performance will be compared to specification requirements. For the second half of the Performance random vibration test, in the same axis, the Endurance random vibration test should be conducted for one hour. This will be repeated for each of the other two mutually orthogonal axes.

3. Gunfire Sine Vibration Test: The equipment will shall perform within specified tolerances after completion of the gunfire test. The following sine dwell tests are applicable because the equipment is located in the aircraft affected by gunfire –induced vibration. The gunfire vibration levels and dwell times are stipulated in Table 1, Zone 2, for high rate (3950 spm) gunfire bursts. During the sinusoidal vibration dwell at each integer harmonic of 3950 spm (65.83Hz), the input vibration shall sweep from 0.95 to 1.05 of the harmonic center frequency and back at a sweep rate of one-half octave per minute. The test article shall be operating during the test and required to meet performance requirements

4. Gunfire Alternate Random Vibration Test: An alternate composite sine/random vibration gunfire test is acceptable in lieu of the sine dwell testing prescribed in Table 1, Zone 2. Table 1 and Figure 2 define the alternate sine dwell and random spectra. The sine dwells are applied for 7.5 minutes / frequency / axis and the random spectra is applied for 15 minutes / axis.

B. Shock Test:

1. Crash Safety Shock Test: 30G, 11 ms half-sine acceleration pulses shall be applied to the equipment. The test article shall be subjected to 12 shock pulses – four (2 in each direction) in each of the orthogonal test axes. At the completion of the tests in each axis the equipment shall be examined for structural failure.
2. Service Shock Test: 15G, 11 ms half-sine acceleration shock pulses shall be applied to the operating test article and critical performance parameters monitored and recorded as detailed by the procurement specification. The test article shall be subjected to 18 shock pulses – six (3 in each direction) in each of the orthogonal test axes. After each shock test, the test article shall be closely inspected for any evidence of mechanical failure and at the conclusion of testing in each axis a performance check shall be made.

QUALIFICATION TEST: ❺❻

Qualification testing shall be performed by the vendor to verify the level of quality for the items procured. All the procured parts shall be capable of meeting the requirements of this attachment. Substantiating test results shall be available upon request.

NOTES:

❶ Responsibility for inspection. The manufacturer shall be responsible for all the inspection requirements specified herein. The manufacturer may use his own or any other facility suitable for the performance of the inspection requirements unless disapproved. The Government reserves the right to perform any of the inspections set forth in this specification where such inspections are deemed necessary to assure supplies and services conform to the prescribed requirements.

❷ Certificate of compliance. With each shipment, the manufacturer shall include a certification that the materials, construction, processing, and the certificate were completed by the manufacturer's quality assurance representative. Signed and dated.

❸ The item shall be permanently and legibly marked with the manufacturer's name or trademark, part number and a front panel marking number.

❹ The item shall be visibly uniform in quality and appearance. They shall by free of burrs, cracks, chips, sharp cutting edges, and other deleterious defects that will adversely affect life and serviceability.

❺ Preservation and packaging shall by sufficiently adequate to protect the procured items against corrosion, contamination, physical damage, and other harmful effects, either in transit or during subsequent storage.

❻ Some of the environmental requirements are augmented or modified. See the applicable paragraph in the attachment for information.

Appendix-B: DVR Interface Requirements. These are derived from TO 1A-10A-2-110-1 Figure , change # 2-253.1. .

The following two tables describe wires in the aircraft that interface with the current CAVTR :

TABLE I – 9730P3 PIN ASSIGNMENTS

PIN NO.	FUNCTION
1	Y-VID-IN-H
2	Y-VID-IN-L
3	C-VID-IN-H
4	C-VID-IN-L
5	COMP-VID-IN-H
6	COMP-VID-IN-L
7	AUDIO-IN-H
8	AUDIO-IN-L
13	28V-RELAY-PWR
15	5VDC-EOT
16	RMT-VID-SEL
17	RMT-MODE-SEL
18	REC-IND-L
39	28V-PWR-INP
41	RMT-VID-SEL
42	RMT-CMD-SEL
43	EOT-IND-L
60	RMT-MODE-SEL 1
61	5VDC-EOT
64	1^{ST} DETENT-H
65	EVENT-MARK-RTN
75	SLEW-EN-H
76	EVENT-MARK-RTN
77	GND
79	CABLE-PRES-L

TABLE II - 9730P4 PIN ASSIGNMENTS

PIN NO.	FUNCTION
A	28VDC-AC-GEN
B	28 VDC RTN
C	NO CONNECTION
D	CHASSIS-GND
E	28VDC-BATT

PHYSICAL SIZE, SHAPE AND CONNECTOINS REQUIREMENTS:

A. The airborne recorder shall be 5.88 inches wide x 6.39 inches deep x 4.75 inches tall, exclusive of connectors, control knobs, eject mechanism, and memory access door.

B. The airborne recorder shall weigh less than or equal to27 pounds.

Note: Linear tolerance not specified are +/-0.03" for x.xx" and for +/-0.010" is for x.xxx" measurements, angular tolerance are +/-0 degrees 30 minutes.

RECORDER REQUIREMENTS:

A. General Requirements:

Video Recording System	Digital Video Recorder (four channels)
Video Signal	EIA RS-170 B/W or NTSC Color standard
Cassette	Digital Memory Module
Recording Time	4 hours min.
Power Requirement	28 VDC +4, -8 V unregulated: MIL-STD-704A
Power Consumption	Less than 20 watts
Components	Commercial quality
Weight	Less than/equal 27 pounds (with the memory unit)

B. Video Requirements:

Acceptable Signal	"S" video format as Y/C separate luminance and chrominance signals, composite RS-170 video compatible with the NTSC standard from the HUD camera, and a monochrome video signal from the cockpit TV monitor containing Maverick video
Input Level	1 +2.0/-0.5 V p-p with AGC
Frequency Response	3.58 MHZ. -5dB
Horizontal Resolution	Minimum of 400 lines B & W or Color

C. Audio Requirements:

Number Of Channels	Four
Frequency Response	100 – 12,500 HZ ± 3 dB
Signal-To-Noise Ratio	50 dB or more
Input Level	0.9±.3 V p-p , flat over bandwidth of 50 Hz ±3 dB

D. Controls and Indicators:

Local Controls	Power-on, record, playback, standby
Remote Ctrl Capabilities	Record/Standby (Auto-Record at Power-up)
Remote Indicators	Power-On

ATTACHMENT 1 CDRL TABLE

CDRL Number	Title	Data Item Description (DID)
C001	Management Plan	Contractor format
N008	Performance Specification Documents	Contractor format
L003	LSA-056, Failure Modes, Effects, and Criticality Analysis (FMECA) Report	Contractor format
N007	Acceptance Test Plan	Contractor format
N00A	Test/Inspection Report	Contractor format
A001	Conference Agenda	Contractor format
D001	Product Drawings and Associated Lists	Contractor format
A002	Conference Minutes	Contractor format
N00L	Engineering Change Proposal (ECP)	Contractor format
L011	Teardown Deficiency Report	Contractor format
L016	Contractor Repair Records	Contractor format
L006	Asset Posture Reporting	Contractor format
L001	Technical data	Contractor format
L008	Maintainability Test Report	Contractor format
L010	Integrated Logistics Support (ILS) Plan	Contractor format
L013	Life Cycle Cost	Contractor format
N004	Weight and Balance Analysis	Contractor format
N013	T-2 Modification Package	Contractor format
N00A	Test Reports	Contractor format
N00B	EMI Test Reports	Contractor format
N00D	Environmental Test Report	Contractor format
N00E	EMI Test Plan/Procedure	DI-EMCS-80201B
P00F	Interface Design Document	DI-IPSC-81434A DI-IPSC-81436A
S001	System Hazard Analysis	DI-SAFT-80102B
S005	Safety of Flight &Airworthiness Certification	Contractor format

ATTACHMENT 2 ACRONYMS

ACO	Administrative Contracting Officer
ATP	Acceptance Test Plan
CAVTR	Color Airborne Video Tape Recorder
CDRL	Contract Data Requirements List
CY	Calendar Year
DD	Department of Defense
DVR	Digital Video Recorder
ECM	Engineering Coordination Memorandum
ECP	Engineering Change Proposal
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
FCA	Functional Configuration Audit
FMECA	Failure Mode Effects and Criticality Analysis
IDD	Interface Design Document
IAW	In Accordance With
JCS	Joint Chief of Staff
LMSI	Lockheed Martin System Integration
MICAP	Mission Capable
MIL-STD	Military Standard
MTBF	Mean Time Between Failures
NSN	National Stock Number
OO-ALC	Ogden Air Logistics Center
OEM	Original Equipment Manufacturer
PCA	Physical Configuration Audit
PCO	Procurement Contracting Officer
PDR	Preliminary Design Review
PMS	Production Management Specialist
POC	Point of Contact
R&M	Reliability and Maintainability
RFP	Request for Proposal
ROD	Report of Discrepancy
RTOK	Retest OK
SF	Standard Form
SIL	Systems Integration Lab
SOW	Statement of Work
SRAN	Supply Record Account Number
SRR	System Requirements Review
TDR	Teardown Deficiency Report
TIM	Technical Interchange Meeting
TO	Technical Order
USAF	United States Air Force
WS	Weapon System